

**CLAIMS**

What is claimed is:

1. A fold-flat hinge assembly, comprising:
  - a support member;
  - an arm pivotally supported by said support member and including a plurality of gear teeth formed thereon;
  - 5 a shaft rotatably supported within a first slot of said support member;
  - a blocking pin slidably supported by said support member and in mechanical communication with said shaft, said blocking pin slidable to a first position wherein said blocking pin prevents rotational motion of said arm relative to said support member; and
  - 10 a gear fixedly attached to said shaft and interacting with said gear teeth of said arm to move said blocking pin to a second position wherein said arm is free to rotate relative to said support member.
2. The fold-flat hinge assembly according to claim 1, further comprising at least one lever arm pivotally attached to said support member at a pivot point and wherein said lever arm rotatably supports said shaft at a first end and a link arm at a second end, said link arm further connecting to  
5 said sliding pin.
3. The fold-flat hinge assembly according to claim 1, further comprising a slot formed in said arm and a stop pin attached to said support member, said slot slidably interfacing said stop pin for defining a rotational range of motion of said arm relative to said support member.

4. The fold-flat hinge assembly according to claim 1, wherein said shaft is also slidably supported in said first slot by said support member for sliding from a first position to a second position in response to said gear interacting with said gear teeth for moving said blocking pin to said second position.

5. The fold-flat hinge assembly according to claim 4, said arm able to rotate relative to said support member when said shaft is in said second position.

6. The fold-flat hinge assembly according to claim 1, further comprising an electric motor for rotating said shaft.

7. The fold-flat hinge assembly according to claim 6, wherein operation of said electric motor comprises a forward mode, a reverse mode and a stop mode.

8. The fold-flat hinge assembly according to claim 1, further comprising a dial for manually rotating said shaft.

9. A powered fold-flat seat hinge assembly for use with a seat and seat back, said powered fold-flat seat hinge assembly, comprising:

a support member including a first slot therein;

an arm pivotably supported by said support member and having a plurality of gear teeth formed thereon, said arm adapted to support the seat back;

a shaft rotatably supported within said first slot of said support member;

a gear fixedly attached to said shaft and interfacing said arm;

a blocking pin slidably supported by said support member between a first position and a second position and mechanically communicating with said shaft, said blocking pin preventing rotation of said arm relative to said support member in said first position and allowing said arm to rotate relative to said support member in said second position; and

an electric motor for rotating said shaft to cause said arm to rotate relative to said support member.

10. The powered fold-flat seat hinge assembly according to claim 9, wherein said blocking pin is moved to said second position by said shaft interacting with said gear teeth of said arm;

11. The powered fold-flat seat hinge assembly according to claim 9, further comprising at least one lever arm pivotally attached to said support member at a pivot point and wherein said lever arm rotatably supports said shaft at a first end and a link arm at a second end, said link arm further connecting to said sliding pin.

12. The powered fold-flat seat hinge assembly according to claim 9, further comprising a slot formed in said arm and a stop pin attached to said support member, said slot slidably interfacing said stop pin for defining a rotational range of motion of said arm relative to said support member.

13. The powered fold-flat seat hinge assembly according to claim 9, wherein said shaft is also slidably supported in said first slot by said support member for sliding from a first position to a second position in response to said gear interacting with said gear teeth for moving said blocking pin to said  
5 second position.

14. The powered fold-flat seat hinge assembly according to claim 9, wherein said arm is able to rotate relative to said support member when said shaft is in said second position.

15. The powered fold-flat seat hinge assembly according to claim 9, wherein operation of said electric motor comprises a forward mode, a reverse mode and a stop mode.

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16. A seat assembly, comprising:

a seat;

a seat back connected to said seat;

a fold-flat hinge assembly, including:

a support member;

an arm pivotally supported by said support member, mounting said seat back, and including a plurality of gear teeth formed thereon;

a shaft rotatably supported within a first slot of said support member;

10 a blocking pin slidably supported by said support member and in mechanical communication with said shaft, said blocking pin slidable to a first position wherein said blocking pin prevents forward rotational motion of said arm relative to said support member; and

15 a gear fixedly attached to said shaft and interacting with said gear teeth of said arm to move said blocking pin to a second position wherein said arm is free to rotate relative to said support member and whereby said seat back is rotatable relative to said seat.

17. The seat assembly according to claim 16, further comprising at least one lever arm pivotally attached to said support member at a pivot point and wherein said lever arm rotatably supports said shaft at a first end and a link arm at a second end, said link arm further connecting to said sliding pin.

18. The seat assembly according to claim 16, further comprising a slot formed in said arm and a stop pin attached to said support member, said slot slidably interfacing said stop pin for defining a rotational range of motion of said arm relative to said support member.

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19. The seat assembly according to claim 16, wherein said shaft is also slidably supported in said first slot by said support member for sliding from a first position to a second position in response to said gear interacting with said gear teeth for moving said blocking pin to said second position.

20. The seat assembly according to claim 19, wherein said arm is able to rotate relative to said support member when said shaft is in said second position.

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